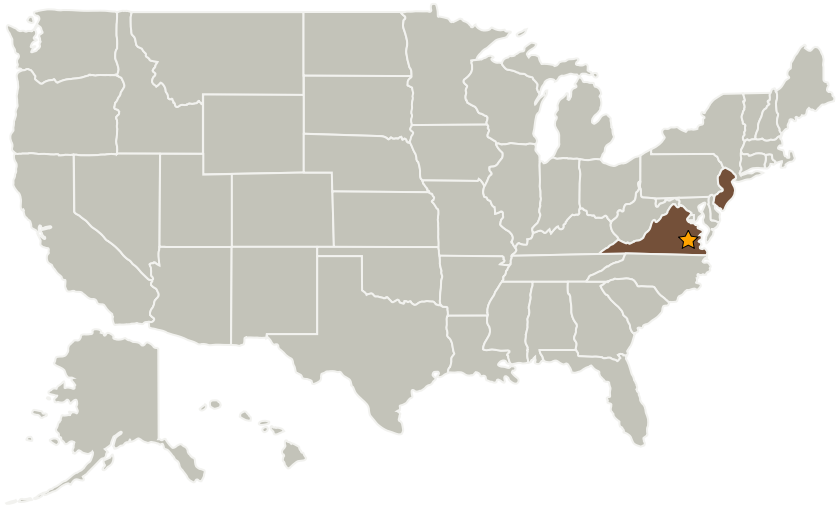
Radiation-Tolerant Reprogrammable FPGA for Digital Signal Processing Circuits, Phase II

Completed Technology Project (2009 - 2011)

Project Introduction

Field Programmable Gate Arrays are a widely used technology; however, they are generally limited in reprogrammability. Radiation hard, low power and high density ReProgrammable FPGAs (RP-FPGAs) would be a tremendous asset in long duration missions. The ability to adapt to changing mission profiles and on board capabilities is highly desirable. We are developing a RP-FPGA technology for flight use. In Phase I we have proven basic device concepts--increasing temperature stability, demonstrating scalable production process, and developing refining Phase II tasks. We have achieved this success by working with a leading FPGA manufacturer, and the enabling materials technology inventor and others. The range of technical interactions has also been increased as a result of the Phase I effort. In Phase II we will develop a viable demonstration prototype that will enable routine Phase III device manufacture. Present work has shown the desired end should be well achievable.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Structured Materials Industries, Inc.	Supporting Organization	Industry	Piscataway, New Jersey

Primary U.S. Work Locations	
New Jersey	Virginia

Project Transitions

March 2009: Project Start

March 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.5 High Performance Field Programmable Gate Arrays